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Wild animals collected by the Independent Company of Environmental Police Monte Roraima in urban area of Boa Vista, Brazilian Amazon

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ABSTRACT

The expansion of the human population causing loss of natural habitats, in addition to the suppression of wild animals from nature, for human consumption or to be maintained as pets, are serious problems that must be solved by environmental government agencies. So, this study was developed aiming to know which species of wild animals are most affected by anthropogenic activities in Boa Vista, Roraima state, between 2014 and 2016. We accessed the seizure data from the Independent Company of Environmental Police Monte Roraima, and we recorded 214 individuals from the Classes: Reptilia (n = 102), Aves (n = 76) and Mammalia (n = 36). Reptiles were represented in their majority by chelonians (51.96%) and scaled reptiles (42.16%), while among birds, passerines and parrots represent around 70% of the group seizures. For mammals, Pilosa and rodents were responsible for 50% of the rescues. These numbers represent a small sample of the wildlife removed from nature, demonstrating that it is necessary to increase the available police force and resources to monitoring operations. Also, environmental awareness activities need to be developed, once that the domestication of wild animals and its consumption are a cultural practice in the region. Thereby this study identified that mainly chelonians, passerines and parrots must be used as target species to direct environmental activities in order to improve the effectiveness of the use of available resources.

Keywords: Roraima; Mammalia; Reptilia; Aves; Environmental Inspection.

Animais recolhidos pela Companhia Independente de Policiamento Ambiental Monte Roraima na área urbana de Boa Vista, Amazônia Brasileira

RESUMO

A expansão da população humana tem ocasionado perda de habitats naturais, somada à supressão de animais silvestres da natureza para o consumo humano ou para a manutenção destes como animais de estimação, são problemas sérios que devem ser resolvidos pelos órgãos ambientais governamentais. Assim, este estudo foi desenvolvido com o intuito de se conhecer quais espécies de animais silvestres são mais afetadas pelas atividades antrópicas em Boa vista, estado de Roraima, entre 2014 e 2016. Nós acessamos os dados das apreensões realizadas pela Companhia Independente de Policiamento Ambiental Monte Roraima, e registramos 214 indivíduos das Classes: Reptilia (n = 102), Aves (n = 76) e Mammalia (n = 36). Os répteis foram representados, em sua maioria, por quelônios (51,96%) e squamatas (42,16%), enquanto entre as aves, pássaros e papagaios representaram cerca de 70% das capturas do grupo. Para os mamíferos, Pilosa e roedores foram responsáveis por 50% dos resgates. Esses números representam uma pequena amostra da vida silvestre retirada da natureza, demonstrando a necessidade de se aumentar a força policial disponível e os recursos para operações de fiscalização. Também existe a necessidade de se desenvolver atividades de conscientização ambiental, uma vez que o consumo e a domesticação de animais silvestres são práticas culturais na região. Desse modo, este estudo identificou que quelônios, pássaros e papagaios devem ser utilizados como espécies-alvo para o direcionamento das atividades ambientais visando aumentar a efetividade do uso dos recursos disponíveis.

Palavras-chave: Roraima, Mammalia, Reptilia, Aves, Fiscalização ambiental.

Introduction

Brazil has a territorial area of over 8.5 million km^2, which is composed of biogeographical regions (biomes) that presented different climatic and geomorphologic conditions, which generates complex ecosystem sets that favor the existence and permanence of numerous different organisms (FUNCATE, 2006; MMA, 2017). Because of its great species diversity, Brazil is considered one of the most richness countries in the world in relation to wildlife, housing about 15% of the 1.8 million species currently known in the world (MMA/SBF, 2002; GBIF.org, 2017), which approximately 19,000 species are endemic to six Brazilian biomes (SiBBr, 2017). Brazil stands out as the country with the largest number of vascular plants (56,215 species) and amphibians (695 species) in the world, in addition to occupies the second position in number of mammals (578 species) and third place in number of birds (1,712 species), reptiles (651 species) and fishes (3,800 species) (BUTLER, 2016). These numbers tend to increase due to the discovery of new species with recent research (RENCTAS, 2001; FARIAS, 2013; SiBBr, 2017). Brazil is home to the largest expanse of tropical rainforest in the world (MMA/SBF, 2002), Amazon region being the area of its highest concentration (SiBBr, 2017). The Amazon biome is considered the biggest reserve of tropical biodiversity in the world and plays a fundamental role in planet's environmental stability (MMA/SBF, 2002). About 60% of Amazon basin is inside Brazilian territory, occupying more than a half of this, along nine states (IBGE, 2004).

Among Brazilian Amazon states, Roraima stands out for presenting a wide part of its territory protected within some type of Environmental Protection Area. Occupying 2.7% of the national territory and 5.3% of Amazon biome (FUNCATE, 2006), Roraima borders with two countries, the Bolivarian Republic of Venezuela and the Cooperative Republic of Guyana, as well as the states of Pará and Amazonas (FERREIRA et al., 2007). Their 224,299 km2, 11.9% are Conservation Units and 46.3% are within Indigenous Lands, which are instruments of great effecti-

veness in the preservation of the integrity of ecosystems and biodiversity (VERÍSSIMO et al., 2011). Since the construction of Federal roads in the beginning 70's, the region comes experiencing a considerable population growth that persists to the present days. In the eastern-central portion of the state is located its capital Boa Vista, with a territory of 5,687 km^2. In last decades, the population of Boa Vista went from about 200,500 inhabitants in 2000 to approximately 326,500 inhabitants in 2016 (IBGE, 2016). This growth has led to an increase of anthropogenic impacts experienced by ecosystem, exposing local biodiversity to direct contact with human population and, successively to different threats (FUCCIO et al., 2003; DINIZ; SANTOS, 2005; FARIAS, 2013).

Vegetation suppression, burned, pollution, construction of hydroelectric dams, alien species introduction, predatory fishing, and hunting, besides the illegal trade in natural goods are the biggest threats to biodiversity maintenance (MMA, 2008). However, the human population does not believe that these threats can exhaust the country's biodiversity and persist in practicing disordered and predatory exploitation of natural resources available (SANTOS; CÂMARA, 2002; BASTOS et al., 2008). In addition to habitat loss for the expansion of cities, removal of wild animals from their natural environments for human consumption or to be maintained as pets are problems should be solved by governmental environmental agencies (SANTOS; CÂMARA, 2002). With the publication of 1988 Federal Constitution and later of Environmental Crimes Law - Law nº 9,605 from 1998, it became state's responsibility to protect Brazilian wildlife (PETERS; PIRES, 2002). However, in Brazil, such supervision is fragile due to operational difficulties owing to territorial expanse, scarcity of human and financial resources, lack of public policy and explicit and directed action plans, among other factors (FUCCIO et al., 2003; BASTOS et al., 2008; LUZ, 2008; VIANA; ZOCCHE, 2013).

Based on this information this study aims to know which wild animal species are more affected by anthropogenic impacts in Boa Vista, and it justifies in the need to understand which are the target species so that it is possible to direct effective strategies in fauna protection and appropriate application of human and material available resources.

Material and Methods

The present study was developed with data available by Independent Company of Environmental Police (CIPA) Monte Roraima from Military Police of Roraima, based in Boa Vista. CIPA was created in 2010 and has the mission to ensure the compliance of environmental legislation in defense of fauna, flora and water resources in Roraima. It is one of the responsible organs for monitoring environmental crimes, acting on several surveillance fronts in all Roraima state.

Data were obtained based on Voluntary Delivery of Wildlife Terms and Police Occurrence Reports executed by CIPA, in Boa Vista, between 2014 and 2016. Based on these archives, were extracted the following information: document number (Voluntary Delivery Terms/Police Occurrence Reports), date and local where occurred the capture, and species taxonomic identification.

The taxonomic nomenclature used in this study followed Reis et al. (2006); Silveira et al. (2008); Vitt et al. (2008); Vogt (2008); Souza (2010); Fraga et al. (2013); Sigrist (2014). Individuals who could not be identified in species level were considered in gender category. The list of animals rescued by CIPA was faced with the Red List of Threatened Brazilian Fauna (ICMBio, 2016) to threatened species identification.

Results and Discussion

CIPA Monte Roraima rescued, between 2014 and 2016, 214 specimens from three Classes: Reptilia (47,66%; n = 102 specimens), Aves (35,51%; n = 76) and Mammalia (16,82%; n = 36) (Table 1; Figure 1). In the present study, only two of rescued animals, *Puma concolor* and *Myrmecophaga tridactyla*, both mammals, are in the Red List of Threatened Brazilian Fauna (ICMBio, 2016), within the category Vulnerable. These numbers represent a small part of the fauna withdrawn from nature, like several studies shows, the number of animals collected in inspection operations throughout Brazilian territory is less than the number of animals taken from nature, once it is estimated that from each ten animals removed from nature, nine will die due to poor accommodation or suffered traumas (ROCHA, 1995; NASCIMENTO, 2009; INSAURALDE et al., 2010).

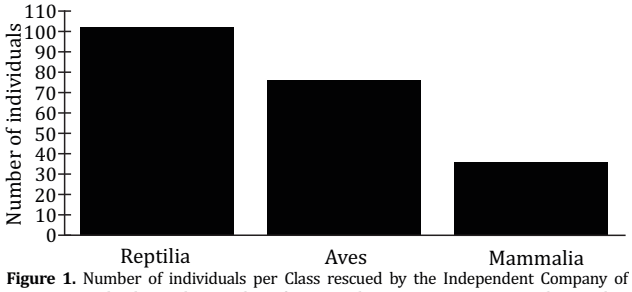

Figure 1. Number of individuals per Class rescued by the Independent Company of Environmental Police, Military Police of Roraima, between January 2014 and December 2016.

Table 1. List of animals rescued by the Independent Company of Environmental Police, Military Police of Roraima, between January 2014 and December 2016.

CLASS/Order/Family	Species	Brazilian popular name	English popular name	Year		
				2014	2015	2016
AVES				**14**	**41**	**21**
Accipitriformes				**1**	**0**	**2**
Accipitridae	*Gampsonyx swainsonii*	Gaviãozinho	Pearl kite	1	0	1
	Heterospizias meridionalis	Gavião-caboclo	Savanna hawk	0	0	1
Anseriformes				**0**	**3**	**1**
Anatidae	*Dendrocygna viduata*	Irerê	White-faced whistling-duck	0	3	1
Charadriiformes				**1**	**1**	**0**
Scolopacidae	*Tringa solitaria*	Maçarico-solitário	Solitary sandpiper	1	1	0
Cuculiformes				**0**	**1**	**0**
Cuculidae	*Crotophaga ani*	Anú-preto	Smooth-billed ani	0	1	0
Falconiformes				**0**	**2**	**1**
Falconidae	*Caracara cheriway*	Caracará-do-norte	Crested caracara	0	1	0
	Falco sparverius	Quiriquiri	American krestel	0	0	1
	Micrastur ruficollis	Falcão-caburé	Barred forest-falcon	0	1	0
Gruiformes				**0**	**1**	**1**
Rallidae	*Porphyrio martinicus*	Frango-d'água-azul	Purple gallinule	0	1	1
Passeriformes				**6**	**16**	**5**
Icteridae	*Cacicus cela*	Xexéu	Yellow-rumped cacique	0	1	0
Mimidae	*Mimus gilvus*	Sabiá-da-praia	Tropical mockingbird	0	2	0
Thraupidae	*Sicalis flaveola*	Canário-da-terra	Saffron finch	0	0	1

Cont.

Cont.

Table 1. List of animals rescued by the Independent Company of Environmental Police, Military Police of Roraima, between January 2014 and December 2016.

CLASS/Order/Family	Species	Brazilian popular name	English popular name	Year		
				2014	2015	2016
	Sporophila angolensis	Curió	Chestnut-bellied seed-finch	**4**	**9**	**2**
	Tangara episcopus	Sanhaçu-da-Amazônia	Blue-gray tanager	0	1	0
Turdidae	*Turdus leucomelas*	Sabiá-barranco	Pale-breasted thrush	0	0	2
Tyrannidae	*Pitangus sulphuratus*	Bem-te-vi	Great kiskadee	0	1	0
N/I	*N/I*	-	-	2	2	0
Pelecaniformes				**1**	**0**	**0**
Ardeidae	*Tigrisoma lineatum*	Socó-boi	Rufescent tiger-heron	1	0	0
Piciformes				**1**	**2**	**0**
Ramphastidae	*Ramphastos toco*	Tucano-toco	Toco toucan	0	2	0
	Ramphastos vitellinus	Tucano-de-bico-preto	Channel-billed toucan	1	0	0
Psittaciformes				**3**	**11**	**9**
Psittacidae	*Amazona amazonica*	Curica	Orange-winged parrot	2	1	1
	Amazona ochrocephala	Papagaio-campeiro	Yellow-crowned parrot	0	2	4
	Amazona sp.	-	-	0	4	2
	Diopsittaca nobilis	Maracanã-pequena	Red-shouldered macaw	1	3	0
	Eupsittula pertinax	Periquito-de-bochecha-parda	Brown-throated parakeet	0	1	1
	Orthopsittaca manilatus	Maracanã-do-buriti	Red-billed macaw	0	0	1
Strigiformes				**0**	**0**	**1**
Strigidae	*Athene cunicularia*	Coruja-buraqueira	Burrowing owl	1	2	1
	Megascops watsonii	Corujinha-orelhuda	Tawny-bellied screech-owl	0	2	0
Tytonidae	*Tyto furcata*	Suindara	American barn owl	0	0	1
MAMMALIA				**3**	**19**	**14**
Artiodactyla				**0**	**2**	**0**
Tayassuidae	*Pecari tajacu*	Cateto	Collared peccary	0	2	0
Carnivora				**1**	**0**	**3**
Canidae	*Cerdocyon thous*	Cachorro-do-mato	Crab-eating fox	1	0	1
Felidae	*Leopardus pardalis*	Jaguatirica	Ocelot	0	0	1
	Puma concolor	Onça-parda	Cougar	0	0	1
Cingulata				**1**	**0**	**1**
Dasypodidae	*Dasypus novemcinctus*	Tatu-galinha	Nine-banded armadillo	1	0	0
	Euphractus sexcinctus	Tatu-peludo	Six-banded armadillo	0	0	1
Didelphimorphia				**0**	**2**	**1**
Didelphidae	*Didelphis marsupialis*	Gambá	Common opossum	0	2	1
Pilosa				**1**	**6**	**4**
Bradypodidae	*Bradypus tridactylus*	Preguiça-de-três-dedos	Pale-throated sloth	0	0	1
Myrmecophagidae	*Myrmecophaga tridactyla*	Tamaduá-bandeira	Giant anteater	0	3	2
	Tamandua tetradactyla	Tamanduá-de-colete	Southern anteater	1	3	1
Primates				**0**	**2**	**3**
Cebidae	*Sapajus apella*	Macaco-prego	Guianan brown tüfted capuchin	0	2	2
N/I	*N/I*	-	-	0	0	1
Rodentia				**0**	**7**	**2**
Caviidae	*Hydrochoerus hydrochaeris*	Capivara	Capybara	0	3	0
Erethizontidae	*Coendou prehensilis*	Ouriço	Brazilian porcupine	0	4	2
REPTILIA				**13**	**48**	**41**
Crocodylia				**0**	**6**	**0**
Alligatoridae	*Caiman crocodilus*	Jacaré-tinga	Spectacled caiman	0	6	0
Squamata				**9**	**15**	**19**
Boidae	*Boa constrictor*	Jiboia	Boa	0	6	6
	Epicrates cenchria	Jiboia arco-íris	Rainbow boa	0	2	2
	Eunectes murinus	Sucuri	Anaconda	7	3	2
Colubridae	*Oxybelis aeneus*	Cobra-cipó	Brown vinesnake	0	0	1
	Spilotes pullatus	Caninana	Chicken snake	1	0	1
Iguanidae	*Iguana iguana*	Iguana	Common green iguana	1	2	4
N/I	*N/I*	-	-	0	2	3
Testudines				**4**	**27**	**22**
Bataguridae	*Rhinoclemmys punctularia*	Perema	Spotted-legged turtle	0	0	3
Podocnemididae	*Podocnemis expansa*	Tartaruga-da-Amazônia	Giant South American river turtle	2	1	1
	Podocnemis sextuberculata	Pitiú	Six-tubercled Amazon river turtle	0	1	0
	Podocnemis unifilis	Tracajá	Yellow-spotted Amazon river turtle	0	3	0
Testudinidae	*Chelonoidis denticulata*	Jabuti-amarelo	Yellow-footed tortoise	0	2	0
	Chelonoidis carbonarius	Jabuti-piranga	Red-footed tortoise	0	8	8
	Chelonoidis sp.	-	-	2	12	10
			Total amount	**30**	**108**	**76**

Reptiles captured (Figure 2A), mostly are chelonians from Order Testudines (53 specimens), representing 51.96% of the Reptilia individuals. Following, we found the Order Squamata with 42.16% of the reptiles seized (43 specimens), been the Family Boinae (boas and anacondas) responsible for more than a half of rescued snakes and lizards. A great number of captured reptiles were also observed in previous studies (e.g. FUCCIO et al., 2003; NASCIMENTO, 2009; FARIAS, 2013; MENDES et al., 2016). Among the group, chelonians were more representative, fact that can be explained by frequent use of these animals as protein source by local people (turtles, peremas and tortoises) (FERRARINI, 1980; REBÊLO; PEZZUTI, 2000), besides being much appreciated as pets, been kept in residences mostly individuals of the genus *Chelonoidis*, the popular tortoises (RENCTAS, 2001). Chelonians are quiet animals of easy capture, facts that facilitate the transport and trade of these animals (FERRARINI, 1980; FUCCIO et al., 2003). On the other hand, the highest number of rescued snakes probably is related to people's fear of these animals, once that most of the snakes were found in backyards or public roads.

Among birds (Figure 2B), Order Passeriformes represent 35.53% of arrests (27 specimens), which approximately 60% (n = 15) were individuals from *Sporophila angolensis*, popularly known as chestnut-bellied seed-finch. Other significant birds amount belonging to Order Psittaciformes (30.26%; n = 23), with around 70% (n = 16) of its individuals belonging to three species of the genus *Amazona*. People preference by birds from the Orders Passeriformes and Psittaciformes are confirmed by several studies in different Brazilian regions (e.g. RENCTAS, 2001; BORGES et al., 2006; VIANA; ZOCCHE, 2013; SILVA; LIMA, 2014; AVELAR et al., 2015). This preference occurs mainly because of their highest species diversity and abundance found in Neotropics, plus their luxuriant plumage (SICK, 1997; INSAURALDE et al., 2010; NUNES et al., 2012), reaching high black market prices (BASTOS et al., 2008). Plus, these animals adapt easily to captive conditions, accepting artificial feed (ration, grains, and fruits) (GOGLIATH et al., 2010; VIANA; ZOCCHE, 2013). Birds of *S. angolensis* are among the world's most common songbirds in captive (SILVA; LIMA, 2014; AVELAR et al., 2015), and are extremely coveted by its attractive singing (SICK, 1997), while parrots are desired by their intelligence, docility and their ease to learn to imitate human voice, besides being extremely beautiful birds by its colorful (FRISCH, 1981; RENCTAS, 2001).

Much of studies shown bird groups as the more seized animals in different regions of Brazil (e.g. RENCTAS, 2001; BASTOS et al., 2008; MEDEIROS, 2014; AVELAR et al., 2015; MENDES et al., 2016). However, to the Amazonian region, in general, reptiles represent the majority of occurrences (e.g. FARIAS, 2013; MENDES et al., 2016), probably in function of animal marketed destination (DA SILVEIRA, 2006). In some Amazonian states exists a great demand for chelonians meat, an important source of protein to local people, besides being considered people tradition the consumption of these animals (FITZGERALD, 1989; REBÊLO; PEZZUTI, 2000), while birds of the registered groups in this study are mainly caught from nature just to being kept as pets (SICK, 1997; RENCTAS, 2001).

For mammals (Figure 2C), Order Pilosa were more representative (31.43%; n = 11), with five individuals of each *Myrmecophaga tridactyla* and *Tamandua tetradactyla*. Second Order with more rescued individuals was Rodentia (25.71%; n = 09), which six individuals belonging to *Coendou prehensilis*, popular known as a porcupine. Carnivore group has only four specimens redeemed by CIPA: two *Cerdocyon thous* (crab-eating fox), one *Leopardus pardalis* (ocelot) and one *Puma concolor* (puma). Most of the rescued mammals can be explained by habitat loss and fragmentation that has been occurred in surroundings of urban areas, where natural environments are converted in areas for plantation and domestic breeding, becoming urbanized areas, approaching resident animals to contact with humans (BARBOSA et al., 2007; AVELAR et al., 2015). In the present study, most of the mammals were redeemed in peripheral areas or in public roads of Boa Vista, confirming the previously exposed. A great number of rescued anteaters probably is related to the fact these animals are easily observed in Boa Vista surroundings (MACEDO, 2008), an area dominated by "lavrado", one of the three important ecological systems found in Roraima (BARBOSA; MIRANDA, 2005), and largely used by these animals. Crab-eating foxes and wild cats rescued were in backyards from residences close to the forested areas, in surroundings of Boa Vista, having been collected to avoid confrontation with the human resident population.

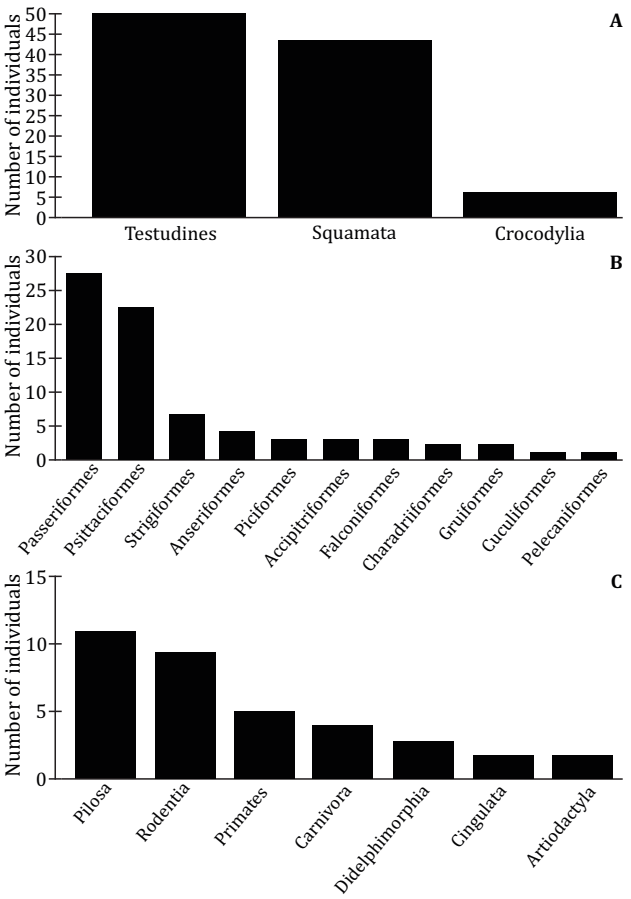

Figure 2. Number of individuals by Order rescued by the Independent Company of Environmental Police, Military Police of Roraima, between January 2014 and December 2016. A - Class Reptilia, B - Class Aves, C - Class Mammalia.

In three years were registered 214 specimens collected by CIPA Monte Roraima, and this low number probably is related to the small police force available in the corporation, as observed by Souza et al. (2014). When we assess these 214 records, we can observe that 2014 had 30 captures (14.02%), 2015 had 108 captured specimens (50.47%) and 2016, 76 specimens (35.51%) (Figure 3A, Table 1). In 2014, birds were the group with more seizures (46.67%; n = 14), belonging to eight species. These, *S. angolensis* were the more seized species (n = 04). With 43.33% (n = 13) from captures, reptiles were represented by five species, of which *Eunectes murinus* were the snake more rescued, with seven individuals, and chelonians had four individuals collected. Only three mammals (10%) were rescued: one crab-eating fox, one nine-banded armadillo, and one southern tamandua. In 2015 CIPA captured 108 animals, which 48 reptiles (44.45%), 41 birds (37.96%) and 19 mammals (17.59%). Among seized reptiles, more than a half were chelonians, mainly from the genus *Chelonoidis* and *Podocnemis*. For birds, around 70% (n = 27) belonging to Orders Passeriformes and Psittaciformes. From the 16 seized Passeriformes, nine belong to *S. angolensis* and, from 11 Psittaciformes, seven belong to genus *Amazona*. The number of mammals markedly increased between 2014 and 2015, rising from four to 19 rescued animals. Those mammals, seven belonging to Order Rodentia (four porcupines and three capybaras) and six to Order Pilosa (three giant anteaters and three southern tamanduas). Already in 2016, reptiles remained the most arrested animals, with 53.95% (n = 41) of seizures, birds represent 27.63% (n = 21) from the arrests and mammals, 18.42% (n = 14). From the 41 seized reptiles, 22 were chelonians mainly from the genus *Chelonoidis* (18 specimens). Among birds, psittaciformes were the most seized (nine individuals), being genus *Amazona* the most representative, with seven specimens.

In this year, only five Passeriformes were seized. From the 14 mammals, three anteaters and three monkeys were rescued. There were also occurrences involving one crab-eating fox, one puma, and one ocelot.

These observed numbers have a strong relationship with the number of environmental inspections realized by CIPA (Figure 3A, 3B). During 2014 the corporation managed to keep environmental policing in the urban area of Boa Vista for 233 days. In 2015, there was environmental policing for 338 days and, in 2016, for 302 days. These facts occur due to the available police force to realize inspection activities, once that CIPA acts together with different agencies in environmental monitoring missions inside the state, having its urban police force decreased by these activities. Great fluctuation in capture numbers among the sampled years is constantly verified when seizure data is reviewed in different corporations (ROCHA, 1995; IBAMA, 1997; BASTOS et al., 2008; SILVA; LIMA, 2014). These studies show that authors relate these fluctuations to the intensity and accuracy of inspections, as well as the lack of order, proper planning, and sufficient resources to operations. On grounds of often lack of human and financial resources faced (e.g. FUCCIO et al., 2003), many corporations prioritize the monitoring of other criminal activities, as illegal fishing and deforestation (MEDEIROS, 2014), staying the inspection of crimes against fauna restricted to investigation of complaints (VIANA; ZOCCHE, 2013). Another factor that influences access to data of the captures realized in a company is the lack of systematization of the process of archiving this data (NASCIMENTO, 2009; MEDEIROS, 2014), in addition to the lack of substantial information in documents executed by agencies during inspections (NUNES et al., 2012; FARIAS, 2013). In the present study we are able to recover almost all the data available, and only an insignificant portion of which is lost (impossibility of identifying the species).

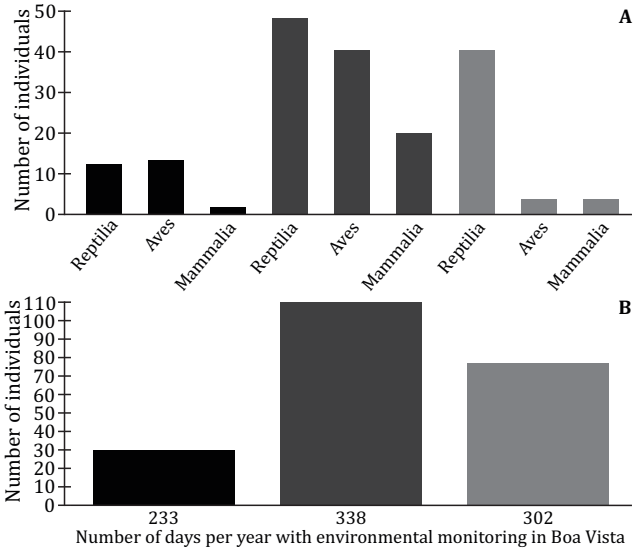

Figure 3. A - Number of individuals rescued by Order, in each year. B - Number of individuals rescued by year, with the number of days with environmental monitoring in the urban area of Boa Vista. Black columns represent 2014; dark gray columns, 2015, and light gray columns, 2016.

Conclusions

The present study shows that, despite the efforts to protect the Brazilian biodiversity, the pressures caused by human activities on natural environments, in addition to the removal of wild animals from nature for human consumption or to being kept as a pet, are still a major threat to the wildlife. It is known that in the study area, breeding of wild animals as a pet or their capture for human consumption is considered as cultural custom, but these practices, even if cultural, need to be modified in order to reduce the pressures on natural systems and animal species. So activities on population awareness (environmental education) of ecological importance from different organisms in the ecosystem are needed, as well as restraint activities (environmental inspection) with the purpose of refrain people resistant to environmental awareness. In this way, this study offers subsidies to direct the scarce resources for environmental protection activities (education and inspection) focused mainly in chelonians, passerines and parrots, the fauna most affected by anthropogenic activities in Roraima. It is clear that human and financial resources provided for environmental protection activities are insufficient and it is necessary to better train the agents involved in monitoring operations, aiming to minimize mistakes in documents, both to standardize and computerize the access to these data.

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